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SOUTH PEEL (LAKEVIEW)
WATER TREATMENT PLANT

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT - 1986

MAY, 1987

Ministry of the Environment
Ontario

J. Bishop, Director
Water Resources Branch

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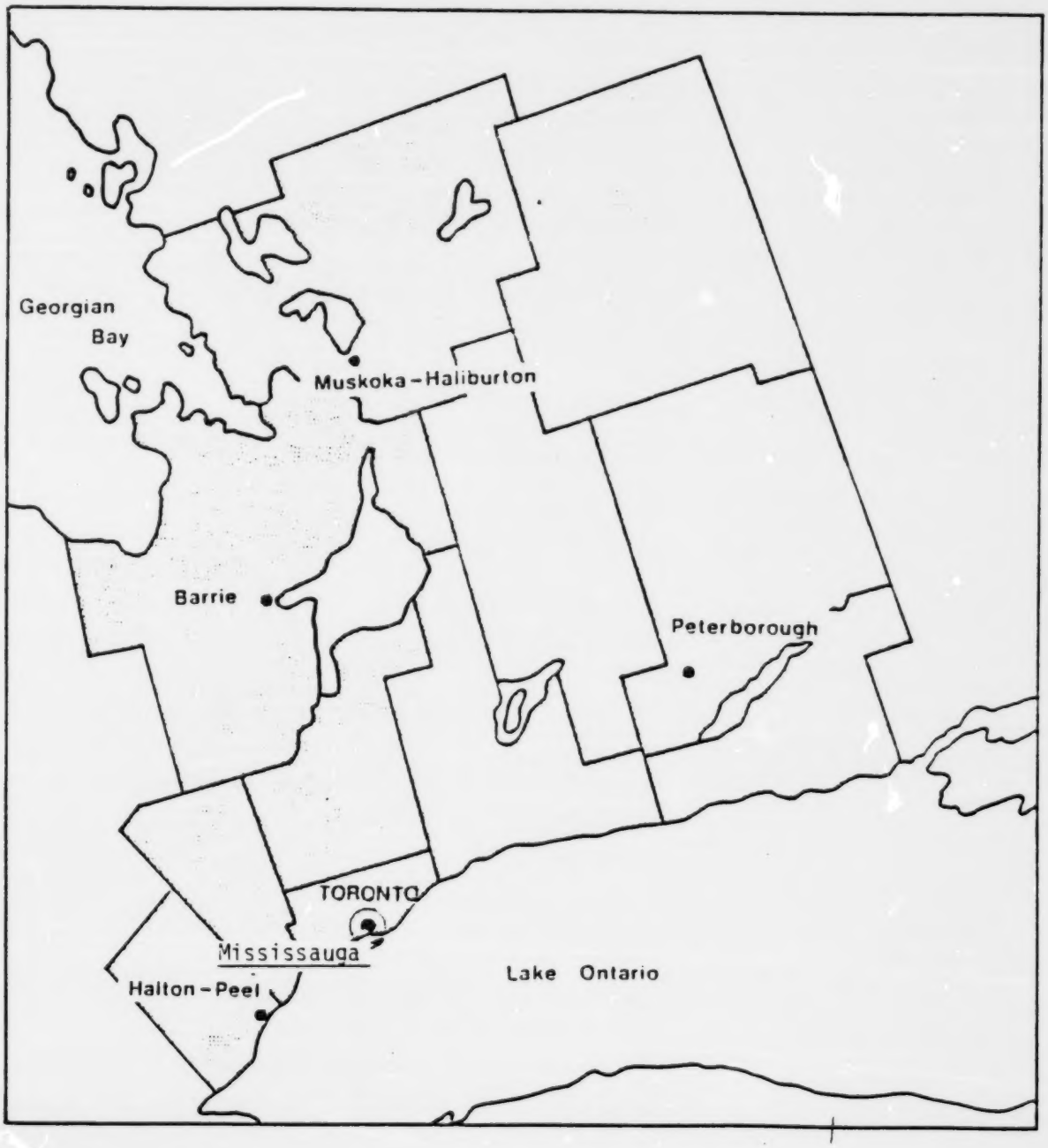
ONTARIO MINISTRY OF THE ENVIRONMENT

Central Region



SOUTH PEEL (LAKEVIEW) WATER TREATMENT PLANT

Location:	920 East Avenue Mississauga, Ontario L5E 1W6 (416-278-8471)
Source:	Lake Ontario
Design Capacity:	218.0 1000 M3/day
Operation:	Ministry of the Environment
Plant Superintendent:	R. Tufts
System Manager:	J. Timko
Ministry Region:	Central Region Toronto Regional Office 7 Overlea Blvd. Toronto, Ont. M4H 1A8 (416-424-3000)
Municipalities Served:	Brampton (125,000) Mississauga (325,000)
Treatment Type:	Physical and chemical treatment consisting of coagulation, flocculation, sedimentation and filtration, (conventional) and disinfection as well as taste and odour control and fluoridation.
Chemicals Used:	Prechlorination - chlorine Coagulation - alum liquid Dechlorination - sulphur dioxide Post chlorination - chlorine Fluoridation - hydrofluosilicic acid Taste and odour control - aqua ammonia.

SOUTH PEEL (LAKEVIEW) WATER TREATMENT PLANT

EXECUTIVE SUMMARY
DRINKING WATER SURVEILLANCE PROGRAM, 1986

The South Peel (Lakeview) Water Treatment Plant was sampled 13 times in 1986; results are given for raw and treated samples.

The parameters analyzed fall into several categories: physical parameters and general chemistry, bacterial parameters, metals, and organic substances including volatile and chloroaromatic substances and pesticides.

The discussion of results focuses on health-related parameters found in treated water:

(a) **Organic Substances**

Analysis was carried out for approximately 110 organic compounds. The only volatile compounds found, trihalomethanes (THMs) were always present in treated waters; the highest level recorded for total THMs was 50 ug/L.

None of the pesticides analyzed for was found.

No chlorophenolic or chloroaromatic compounds were found.

(b) **Other Parameters**

The aesthetic ODWO* for organic nitrogen was exceeded in most treated water samples; while the ODWO for turbidity was exceeded in one sample of treated water. Of the other physical, general chemistry and microbiological parameters and metals analyzed, for which there are health-related ODWO, none exceeded the objectives, in treated water.

The results of these analyses are consistent with those obtained in other areas of the Great Lakes.

The treated water from the supply did not exceed any known health-related guidelines for organic substances applicable to drinking water.

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* The Ontario Drinking Water Objectives, revised 1983.

SOUTH PEEL (LAKEVIEW) WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS
DRINKING WATER SURVEILLANCE PROGRAM, 1986

The South Peel (Lakeview) Water Treatment Plant was sampled 13 times in 1986.

PARAMETER CATEGORY	TYPE OF SAMPLE RAW	TREATED*
1. GENERAL CHEMISTRY - includes anions such as sulphate, field analyses such as chlorine residual and physical parameters such as colour.		
Total number of parameters in category: 21		
- Total number of analyses completed	234	232
- Total number of positive results	227	179
- **Number of times guidelines exceeded**	**N/A**	**10**
Guidelines exceeded - aesthetic ODWO** for organic nitrogen (9) - ODWO for turbidity (1)		
2. METALS - includes metals such as copper and lead.		
Total number of parameters in category: 24		
- Total number of analyses completed	280	280
- Total number of positive results	166	148
- **Number of times guidelines exceeded**	**N/A**	**0**
3. BACTERIOLOGY - includes bacteria such as coliforms.		
Total number of parameters in category: 5		
- Total number of analyses completed	52	61
- Total number of positive results	51	13
- **Number of times guidelines exceeded**	**N/A**	**0**
4. VOLATILES - includes compounds such as benzene and toluene; also included in this category are trihalomethanes (5 parameters), acknowledged to be produced during water treatment.		
Total number of parameters in category: 29		
- Total number of analyses completed	335	363
- Total number of positive results	0	51
- **Number of times guidelines exceeded**	**N/A**	**0**
5. PESTICIDES -		
Total number of parameters possible in category: 65		
- Total number of analyses completed	407	440
- Total number of positive results	0	0
- **Number of times guidelines exceeded**	**N/A**	**0**
6. CHLOROAROMATICS AND CHLOROPHENOLS - includes a range of chlorinated organic compounds.		
Total number of parameters possible in category: 19		
- Total number of analyses completed	168	181
- Total number of positive results	0	0
- **Number of times guidelines exceeded**	**N/A**	**0**

* Total number of analyses completed will not always equal the number of parameters analyzed for multiplied by number of times the supply was sampled, because of accidents during shipping or analyses or analytical difficulties.

** Ontario Drinking Water Objective.

DRINKING WATER SURVEILLANCE PROGRAM

The Drinking Water Surveillance Program (DWSP) for Ontario is a computerized drinking water information system. The objectives of this program are to provide:

- immediate, reliable, current information on drinking water quality,
- a flagging mechanism for 'Objective' exceedence,
- a definition of contaminant levels and trends,
- a comprehensive background for remedial action,
- a framework for assessment of new contaminants,
- an indication of treatment efficiency of plant processes.

Program

The DWSP began in April 1986 and is designed to eventually include all municipal water supplies in Ontario. Water supply locations have been prioritized for surveillance, based primarily on such criteria as population density, probability of contamination and geographical location.

Once the data base becomes established, an assessment of monitoring requirements for the future will be made; monitoring will be continued at the initial locations at an appropriate level and further locations will be phased on to the program as resources permit. It is

estimated that after 4 years of operation, the program will be monitoring 90 locations.

A major goal of the program is to collect valid water quality data, in context with plant operation characteristics in the plant at the time of sampling.

Assessments are carried out at all locations prior to sampling in order to acquire full plant process and distribution system details, and to designate (and retrofit if necessary) all sampling systems and locations.

Samples are taken of the raw (ambient water quality) and treated water at the treatment plants, and also in the distribution systems. In order to determine possible effects of distribution on water quality, both standing and flowing water in old and new sections of the distribution system are sampled. Sampling is carried out by Ministry of the Environment (MOE) Regional staff and/or Municipal personnel who have been trained in the applicable procedures. Comprehensive sampling kits and documented sampling procedures are made available to samplers. This ensures that samples are taken and shipped according to standard protocols and that field testing will supply reliable data. All analyses are carried out using approved documented procedures.

Data Reporting Mechanism

Final analytical results are usually received by the DWSP reporting system within 6 weeks of the time of sampling. At this time, printouts of the completed analyses are sent to the MOE District Officer and the appropriate MOE regional office, and are also retained by the DWSP co-ordinator. The DWSP is able to monitor analysis results and assess trends. Should the level of

a contaminant exceed a health-related Ontario Drinking Water Objective, action is required as outlined in the publication, Ontario Drinking Water Objectives.* The DWSP issues an "Action Alert" which notifies appropriate MOE and health authorities, and supplies a history of the occurrence of the contaminant in the water supply system concerned.

Parameters Analyzed

About one hundred and forty (140) different parameters are routinely measured on DWSP covering microbiological, organic and inorganic substances of concern, as well as process parameters.

Parameters included in the program are based on the following criteria:

- probability that the substance has the potential to cause problems (health-related or aesthetic);
- probability of occurrence in ambient water;
- availability of routine analytical and sampling methods for monitoring and control purposes;
- feasibility of control.

The range of parameters includes those having Ontario Drinking Water Objectives (ODWO), World Health Organization Drinking Water Guideline values, or other

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* Ontario Drinking Water Objectives, revised 1983, published by the Ontario Ministry of the Environment.

jurisdiction's drinking water objectives (e.g. State of California) as well as compounds of concern to other agencies such as the International Joint Commission, and U.S. Environmental Protection Agency.

The parameters monitored routinely during 1986 are shown in Table 1; this table also includes available guidelines which are appropriate for drinking water, and the analytical detection limit (the lowest concentration that can be detected by laboratory analysis) for each parameter.

Analyses for additional pesticides may be included on certain sampling dates; such additional pesticides are selected from the list shown in Table 1A. These analyses may be done on a seasonal basis, in response to an identified concern or because of a potential for occurrence in certain locations. Seasonal analyses for specified additional pesticides are normally carried out at times corresponding to maximal agricultural use or run-off periods, i.e. in spring and fall seasons.

Drinking Water Guidelines

The Ministry of the Environment published a revised edition of "Ontario Drinking Water Objectives" in 1983.

The primary purpose of drinking water objectives is the protection of the health of the public consuming the water. Aesthetic considerations may also provide a basis for drinking water objectives, since the water should be pleasant to drink. The control of such aspects of water quality as hardness, corrosiveness, etc. is also important. The limits set are considered to outline the minimum requirements necessary to fulfill the above objectives, and may be either health-related or related to aesthetic and other considerations.

Because this survey covered such a large number of parameters, many of them did not have an ODWO. In order to be able to compare data results to health guidelines, it was necessary to refer to objectives and guidelines developed by other jurisdictions.

The footnotes to Table 1 indicate the sources and derivation of the various guidelines.

TABLE 1: DRINKING WATER SURVEILLANCE PROGRAM, PARAMETERS ANALYSED

PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit	PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit
CHEMISTRY:			Barium	1 mg/L	0.001 mg/L
Conductivity	-	0.01 UMHO/CM	Boron	5 mg/L	0.02 mg/L
			Beryllium	-	0.001 mg/L
Hardness	-	0.5 mg/L	Cyanide	0.2 mg/L	0.001 mg/L
Calcium	-	0.1 mg/L	Cadmium	0.005 mg/L	0.0003 mg/L
Magnesium	-	0.05 mg/L	Cobalt	-	0.001 mg/L
Sodium	-	0.1 mg/L	Chromium	0.05 mg/L	0.001 mg/L
Alkalinity		0.2 mg/L	Copper	1 mg/L	0.001 mg/L
pH	-	-	Mercury	1 µg/L	0.01 µg/L
Fluoride	2.4 mg/L	0.01 mg/L	Molybdenum	-	0.001 mg/L
Chloride	250 mg/L	0.2 mg/L	Nickel	-	0.002 mg/L
Residue total (solids)	-	1 mg/L	Lead	0.05 mg/L	0.003 mg/L
Turbidity	1 FTU	.01 FTU	Selenium	0.01 mg/L	0.001 mg/L
Phosphorus	-	0.002 mg/L	Strontium	-	0.001 mg/L
Phosphates	-	0.0005 mg/L	Vanadium	-	0.001 mg/L
Nitrogen Total Kjeldahl	0.15 mg/L*	0.1 mg/L	Zinc	5 mg/L	0.001 mg/L
Ammonium Total	-	0.05 mg/L			
Colour	5 TCU	0.5 TCU	BACTERIOLOGY (RAW ONLY):		
Nitrates Total	10 mg/L as N	.05 mg/L	Total Coliform MF	-	0
			Total Coliform MF BKGD	-	0
Nitrite	1 mg/L as N	0.0005 mg/L	Fecal Coliform	-	0
			Standard Plate Count MF	-	0
METALS:			(TREATED ONLY):		
Uranium	0.02 mg/L(t)	0.002 mg/L‡	Present/Absent (P/A) Test	Absent	Absent
Iron	0.3 mg/L	0.002 mg/L	Total Coliform MF BKGD	-	0
Manganese	0.05 mg/L	0.001 mg/L	Fecal Coliform	0	0
Aluminum	-	0.003 mg/L	Standard Plate Count MF	<500 orgs/mL	0
Arsenic	0.05 mg/L	0.001 mg/L			

TABLE 1: DRINKING WATER SURVEILLANCE PROGRAM, PARAMETERS ANALYSED (cont'd)

PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit	PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit
VOLATILES:			CHLOROAROMATICS:		
1,1-Dichloroethylene	0.3 µg/L(h)	1.0 µg/l	Hexachloroethane	19000 ng/L(e)	1 ng/L
Dichloromethane	40 µg/L(c)	5 µg/L	1,3,5-Trichlorobenzene	10000 ng/L(y)	5 ng/L
TRS-1,2-Dichloroethylene	-	1 µg/L	1,2,4-Trichlorobenzene	15000 ng/L(y)	5 ng/L
1,1-Dichloroethane	-	1 µg/L	Hexachlorobutadiene	4500 ng/L(e)	1 ng/L
Chloroform	350 µg/L++	1 µg/L	1,2,3-Trichlorobenzene	10000 ng/L(y)	5 ng/L
1,1,1-Trichloroethane	1000 µg/L(c)	1 µg/L	2,4,5-Trichlorotoluene	-	5 ng/L
1,2-Dichloroethane	10 µg/L(h)	1 µg/L	2,3,6-Trichlorotoluene	-	5 ng/L
Carbon Tetrachloride	3 µg/L(h)	1 µg/L	1,2,3,5-Tetrachloro-benzene	-	1 ng/L
Benzene	10 µg/L(h)	1 µg/L	1,2,4,5-Tetrachloro-benzene	38000 ng/L(e)	1 ng/L
1,2-Dichloropropane	-	1 µg/L	2,6,A-Trichlorotoluene	-	5 ng/L
Trichloroethylene	30 µg/L(h)	1 µg/L	1,2,3,4-Tetrachloro-benzene	-	1 ng/L
Dichlorobromomethane	350 µg/L++	1 µg/L	Pentachlorobenzene	74000 ng/L(e)	1 ng/L
Toluene	100 µg/L(c)	1 µg/L	Total PCB's	3000 ng/L(t)	20 ng/L
1,1,2-Trichloroethane	6 µg/L(e)	1 µg/L			
Chlorodibromomethane	350 µg/L++	1 µg/L	PESTICIDES:		
Tetrachloroethylene	10 µg/L(h)	1 µg/L	Hexachlorobenzene	10 ng/L(h)	1 ng/L
Chlorobenzene	100-300 ng/L(h)*	1 ng/L	Heptachlor	3000 ng/L+++	1 ng/L
Trifluorochlorotoluene	-	1 µg/L	Aldrin	700 ng/L**	1 ng/L
Ethylbenzene	1400 µg/L(e)	1 µg/L	PP-DDE	d	1 ng/L
Ethylene Dibromide	0.02 µg/L(x)	1 µg/L	Mirex	-	5 ng/L
P-Xylene	620 µg/L(c)	1 µg/L	Alpha BHC	700 ng/L(c)	1 ng/L
M-Xylene	620 µg/L(c)	1 µg/L	Beta BHC	300 ng/L(c)	1 ng/L
O-Xylene	620 µg/L(c)	1 µg/L	Gamma BHC (Lindane)	4000 ng/L	1 ng/L
Total Trihalomethanes	350 µg/L++	3 µg/L	Alpha Chlordane	7000 ng/L***	2 ng/L
Bromoform	350 µg/L++	1 µg/L	Gamma Chlordane	7000 ng/L***	2 ng/L
1,1,2,2-Tetrachloroethane	1.7 µg/L(e)	1 µg/L	Oxychlordane	-	2 ng/L
1,4-Dichlorobenzene	400 µg/L(e)	1 µg/L			
1,3-Dichlorobenzene	400 µg/L(e)	1 µg/L			
1,2-Dichlorobenzene	400 µg/L(e)	1 µg/L			

TABLE 1: DRINKING WATER SURVEILLANCE PROGRAM, PARAMETERS ANALYSED (cont'd)

PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit	PARAMETER CATEGORY	Objective Guideline (1)	Detection Limit
Pesticides (cont'd)					
OP-DDT	30000 ng/L(d)	5 ng/L			
PP-DDD	d	5 ng/L			
PP-DDT	d	5 ng/L			
Methoxychlor	100000 ng/L	5 ng/L			
Heptachlor Epoxide	3000 ng/L+++	1 ng/L			
Endosulfan 1	74000 ng/L(ea)	2 ng/L			
Dieldrin	700 ng/L**	2 ng/L			
Endrin	200 ng/L	4 ng/L			
Endosulfan 2	74000 ng/L(ea)	4 ng/L			
Endosulfan Sulphate	-	4 ng/L			
Octachlorostyrene	-	1 ng/L			
Toxaphene	5000 ng/L	PA(xx)			

Footnotes:

(1) = Ontario Drinking Water Objectives (ODWO) for drinking water, unless noted.

(t) = ODWO Interim maximum acceptable concentration (IMAC) for drinking water.

(c) = California State Department of Health Action Level for drinking water.

(d) = ODWO for DDT (contains other isomers such as OPDDT and PPDDT).

(e) = US EPA ambient guideline; guideline levels when it is assumed that untreated water and fish and shellfish are consumed from the same body of water.

(ea) = United States Environmental Protection Agency (US EPA) ambient level for endosulfan (contains other isomers).

(h) = World Health Organization (WHO) guideline for drinking water.

(h)* = World Health Organization (WHO) Odour Threshold for drinking water.

(x) = State of Florida, maximum contaminant level for drinking water.

(xx) = the presence of toxaphene is detected in scan used; positive samples would be quantified by special additional analysis.

(y) = New York State (Taste and Odour) proposed drinking water guideline.

++ = total Trihalomethanes.

+++ = combined total; Heptachlor and Heptachlor Epoxide.

* = total Kjeldahl Nitrogen minus Ammonia Nitrogen.

** = total of Aldrin and Dieldrin.

*** = Chlordane is a mixture of alpha and gamma isomers.

‡ = Analysis changed to mass spectrometry method in mid-1986, detection limit 0.0001 mg/L.

TABLE 1A: DRINKING WATER SURVEILLANCE PROGRAM SPECIAL PESTICIDES

Dicamba	Reldan
2,4-D	Ronnel
2,4-DB	Carbofuran
2,4-DP	Propoxur
2,4,5-T	IPC
Silvex (2,4,5-TP)	Aminocarb
Picloram	CIPC
2,4,6-Trichlorophenol	Eptam
2,4,5-Trichlorophenol	Benonyl
2,3,4-Trichlorophenol	Bux
2,3,5,6-Tetrachlorophenol	Diallate
2,3,4,5-Tetrachlorophenol	Sevin
Pentachlorophenol	Sutan
Diazinon	Propazine
Dichlorvos	Atrazine
Dursban	Simazine
Ethion	Sencor (metribuzin)
Guthion	Bladex (Cyanazine)
Malathion	Prometone
Mevinphos	Ametryne
Methyl Parathion	Prometryne
Methyl Trithion	Atratone
Parathion	Alachlor
Phorate (Thimet)	Metolachlor

RESULTS AND DISCUSSION

The parameters analyzed fall into several categories: physical parameters and general chemistry (chemistry), bacterial parameters, metals, and organic substances including volatile and chloroaromatic substances and pesticides. Many of the substances analyzed for are naturally-occurring or treatment by-products.

The results of analysis of raw and treated water samples are shown in Tables 2 and 3. Table 2 shows the categories of parameters analyzed, as well as the total number of analyses which were completed in each category for both raw and treated water samples and the total number of positive results which were obtained. Table 3 lists the sampling dates and the numerical values for each parameter for which analysis produced a positive (quantifiable) result.

The South Peel (Lakeview) Water Treatment Plant was sampled 13 times in 1986.

(a) Non Organic Substances

There are 406 positive results of 466 reported analyses for physical parameters, such as pH and temperature and general chemistry tests. The results of these tests are used as an indication of the analytical validity and integrity of the samples, the general characteristics of the water, and as a guide to making an assessment of the treatment process; they may also indicate whether any changes occur during the time elapsing between sampling and actual analysis. Organic nitrogen exceeded the aesthetic ODWO in all but four of the treated water samples; levels of organic nitrogen above the limit can result in taste and odour

problems. On February 3, 1986 the turbidity in the treated water at 1.58 FTU exceeded the ODWO of 1 FTU. Turbidity may interfere with disinfection and the maintenance of a chlorine residual; this effect was not apparent on this occasion although an appropriate action alert would have been dispatched.

Positive results were obtained for 64 analyses for bacterial parameters out of a total number reported of 113. These bacterial tests include those for species of paramount importance from a public health point of view, and those which assess the general bacteriological quality and characteristics of the water; by this means, a measure is obtained of the overall efficiency of water treatment processes. Positive results were obtained for treated water samples for standard plate count (a measure of the total number of bacteria in a water sample) with the highest count of 38 organisms per mL found on September 12, 1986. The ODWO recommend that treated water not exceed 500 organisms per mL for standard plate count. Three of the positive results in the treated water were for total coliform (one positive result at 1 organism per 100 mL) and total coliform background (two positive results at 1 and 4 organisms per 100 mL). Low levels of coliforms were also present on October 29, 1986, in treated water. The ODWO for "poor water quality" states that "where total coliform bacteria are present at levels below 5 organisms per 100 mL, they should not occur in more than 25% of the samples in a single submission, nor in successive submissions from the same sample site". Therefore, no exceedence of the ODWO occurred.

Analyses of 560 tests for metals in the water samples were reported; of these 314 were positive results. Metals can occur naturally and most are generally regarded as being ubiquitous. However, some may be present in water as a result of industrial or other discharges. A small number of metals have public health significance.

Of those parameters discussed above for which there are ODWO, none exceeded the Objectives except for organic nitrogen and turbidity. Nor did the levels exceed any guidelines for drinking water set by other jurisdictions, such as the U.S. Environmental Protection Agency (US EPA), the World Health Organization (WHO) and Health & Welfare, Canada (H&W, Canada). Furthermore, the results of these analyses are consistent with those obtained in other areas of the Great Lakes.

(b) **Organic Substances**

Of a total of 698 analyses for volatile organic compounds, only 51 were positive; these were from treated water samples and were all due to the presence of trihalomethanes.

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will almost always only occur in treated waters. Trihalomethanes are comprised mainly of chloroform, chlorodibromomethane and dichlorobromomethane with bromoform occurring occasionally. Results are reported for the individual compounds as well as for their sum, which is expressed as total trihalomethanes (total THM). The ODWO for total THM is 350 ug/L; this level was not exceeded in any of the water samples included in this report, the

highest level recorded being 50 ug/L on August 11, 1986.

Five hundred and ninety four (594) tests were carried out for twenty three different pesticides; none was found above trace levels. As of April 7, 1986, an additional eight pesticides (propazine, atrazine, simazine, Sencor, Bladex, prometone, ametryne and prometryne) were added to the monthly pesticide analyses. In May, atratone was added and in July, alachlor and metolachlor were added to the above list. None of these pesticides was found in raw or treated water.

Eight special pesticides (dicamba, 2,4-DP, 2,4-D, Silvex, 2,4,5-T, 2,4-DB and picloram) were analyzed for on April 7, 1986, August 11, 1986 and October 16, 1986. Additional parameters were analyzed for in October 16, 1986 (Table 1A). None of the above compounds was found at any time in raw or treated water. Special pesticides analysis is carried out only once or twice a year at each supply, on a seasonal basis, to correspond to the use and/or loss of such pesticides on agricultural land.

There were no positive results for chloroaromatic compounds in the treated water at this supply; thus providing 0 positive results out of a total of 325 analyses in this category.

Six chlorophenolic compounds (2,4,6-trichlorophenol, 2,4,5-trichlorophenol, 2,3,4-trichlorophenol, 2,3,5,6-tetrachlorophenol, 2,3,4,5-tetrachlorophenol and pentachlorophenol) were analyzed for on April 7, 1986 and August 11, 1986 and October 6, 1986; none was found.

CONCLUSIONS

The data reveal that for metals, inorganic ions, and bacterial parameters, raw water values are frequently in the detectable range; levels of metals and inorganics are also found in treated water. The levels of metals, inorganic compounds, and bacteria are consistent with those found in other water supplies in the province.

For the organic compounds, most are below detection levels, even though the most sophisticated equipment available was employed in the chemical analysis.

ODWO have not been established for some of the compounds analysed; for these few compounds, use was made of appropriate guidelines set by other agencies, such as the World Health Organization, the US Environmental Protection Agency, Health and Welfare Canada or other agencies. None of these guidelines was exceeded.

The treated water at the supply did not exceed any known health-related guidelines for organic substances applicable to drinking water.

TABLE 2

SOUTH PEEL (LAKEVIEW) WATER TREATMENT PLANT

	PARAMETER GROUP	TYPE OF SAMPLE RAW	TREATED
1.	GENERAL CHEMISTRY		
	- Total samples	234	232
	- Total positives	227	179
2.	METALS		
	- Total samples	280	280
	- Total positives	166	148
3.	BACTERIOLOGY		
	- Total samples	52	61
	- Total positives	51	13
4.	VOLATILES		
	- Total samples	335	363
	- Total positives	0	51
5.	PESTICIDES		
	- Total samples	285	309
	- Total positives	0	0
6.	CHLOROAROMATICS		
	- Total samples	156	169
	- Total positives	0	0
7.	CHLOROPHENOLS		
	- Total samples	12	12
	- Total positives	0	0
8.	SPECIAL PESTICIDES		
	- Total samples	122	131
	- Total positives	0	0

Table 3

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/11/*

PARAMETERS	UNITS		SAMPLE DATE										
			86/01/06	86/02/03	86/03/03	86/04/07	86/05/05	86/06/02	86/07/07	86/08/11	86/09/02	86/10/06	86/10/29
ALKALINITY	MG/L-CAC	R	106 60	99 60	98 400	101 00	105 00	100 50	99 20	99 50	99 90	99 40	109 10
		T	90 200	89 600	91 200	93 500	96.400	91 400	90 300	91 300	92 200	87 200	101.20
ALUMINUM	MG/L-AL	R	330	093	.150	2 600	.180	200	130	.210	086	.150	.170
		T	058	098	100	.084	.160	180	100	.081	092	.070	.150
ARSENIC	MG/L-AS	R	001	001					002	.001			001
		T		001					002	.001			.001
BARIUM	MG/L-BA	R	021	019	.020	.033	033	.022	023	.024	.022	.022	.024
		T	020	018	.019	017	022	.021	021	.022	.022	.021	.024
BORON	MG/L-BO	R	050	060	140		.040	020	030	.020	040	.020	.040
		T	040	060	030		030	030	030	.030	.030	.020	.030
BERYLLIUM	MG/L-BE	R					010						
		T											
CALCIUM	MG/L-CA	R	41 500	39 000	39 500	41 000		40 600	40 400	39 500	40 300	40 200	41 800
		T	42 800	40 000	39 000	41 800	39 500	40 900	40 300	40 100	41 300	42 100	40.800
CADMIUM	UG/L-CD	R					9 000						
		T		300									
CHLORIDE	MG/L-CL	R	33 000	30 000	30 400	29 900	27 000	27 000	25 500	23 500	24 500	23 500	26 500
		T	36 600	32 800	33 400	32 950	29 500	31 000	28 500	27 000	27 500	27 000	28 000
COLOUR	HZU	R	12 000	10 000	3 500	4 000	2 500	4 500	2 000	3 500	3 000	3 000	3 500
		T											
CONDUCTIVITY	UMHO/CM	R	372 00	357 00	352 00	351 00	333 00	338 00	330 00	321.00	327 00	321.00	344.00
		T	382 00	363 00	360 00	357 00	342 00	343 00	335 00	327.00	332 00	339.00	347.00
COBALT	MG/L CO	R	001	001		004	011						
		T											

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/17/

PARAMETERS	UNITS		SAMPLE DATE										
			86/01/06	86/02/03	86/03/03	86/04/07	86/05/05	86/06/02	86/07/07	86/08/11	86/09/02	86/10/06	86/10/29
CHROMIUM	MG/L-CR	R	003	003	002	008	013	001	001	001	001	001	001
		T	.002	002	002	002	.001	001		001	001		
COPPER	MG/L-CU	R	057	032	035	150	057	076	070	075	051	044	034
		T	007	005	005	006	003	004	002	003	003	003	002
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	R	96 000	15 000	15 000	54 000	3 000	42 000	1 000	18 000	46 000	20 000	92 000
		T											
IRON	MG/L-FE	R	420	110	170	4 100	280	270	210	360	130	170	340
		T		012	006	013	018	024	005	005	012	002	022
FLUORIDE	MG/L-F	R	140	180	200	1 000	130	170	150	150	140	130	130
		T	870	1 130	1 040	900	1 060	1 160	1 120	1 140	1 120	1 020	1 220
FIELD COMBINED CHLORINE RESIDUAL	MG/L-CL	R											
		T	1 050	400	980	100	400	710	1 030	440	950	500	1 000
FIELD FREE CHLORINE RESIDUAL	MG/L-CL	R											
		T	100	600	060		280	250	100	460	150	500	
FIELD TOTAL CHLORINE RESIDUAL	MG/L-CL	R											
		T	1 150	1 000	1 040	100	680	960	1 130	900	1 100	1 000	1 000
FIELD PH		R	8 100	8 100	7 980	8 010	8 060	8 100	7 800	7 800	7 800	7 900	7 800
		T	7 800	7 550	7 350	7 520	7 600	7 400	7 500	7 400	7 500	7 200	7 500
FIELD TEMPERATURE	DEG C	R	4 000	5 000	6 000	6 000	8 500	12 000	10 000	15 000	14 000	15 000	13 000
		T	4 000	4 000	5 000	7 000	7 500	9 000	10 000	11 000	12 200	16 000	11 000
FIELD TURBIDITY	FTU	R	13 000	6 400	1 600	32 500	3 900	1 700	1 200	6 400	3 100	440	5 000
		T	270	360	270	410	680	450	600	340	520	200	800

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP LWSP RESULTS

02/11/*

PARAMETERS	UNITS		SAMPLE DATE 86/01/06	86/02/03	86/03/03	86/04/07	86/05/05	86/06/02	86/07/07	86/08/11	86/09/02	86/10/06	86/10/29
HARDNESS	MG/L-CAC	R	143 00	132 80	134 00	138 00	133 00	136 50	134 50	130 00	134 00	134 50	141 50
		T	146 00	135 30	134 00	139 50	134 50	137 00	134 50	132 50	137 50	141.00	138.00
STANDARD PLATE COUNT MEMBRANE FILT.	CT/ML	R	520 00	69 000	79 000	720 00	98 000	1000 0	96 000	1500 0			
		T	1 000			5 000	1 000	1 000		1 000	38 000	15 000	
MERCURY	UG/L-HG	R	050			020	010	010		020		010	
		T	070		070		010	010			020	.010	
MAGNESIUM	MG/L-MG	R	9 500	8 600	8 700	8 650	8 640	8 600	8 150	7 650	8 150	8 250	9 000
		T	9 400	8 600	9 000	8 600	8 750	8 500	8 250	7 800	8 250	8.700	8 800
MANGANESE	MG/L-MN	R	016	010	008	140	021	013	009	012	005	.006	014
		T	002	002	002	002	001	002	002	001	001		002
MOLYBDENUM	MG/L-MB	R	002	001		003	008						
		T	002	001		001		001	001	001	001	001	001
SODIUM	MG/L-NA	R	18 100	16 500	16 500	16 500	13 100	14 400	12 500	12 500	12 900	12 200	13 700
		T	18 400	16 500	17 000	16 400	13 500	14 200	12 500	12 600	12 500	13 000	13 400
NICKEL	MG/L-NI	R	004	004	003	008	026	004		002	002		.002
		T	003	003	002	002	002	003		002	002		
AMMONIUM TOTAL	MG/L-N	R	140	066	012	050	010	142	044		028	.026	032
		T	090	012	278	208	008	124	080	008		.010	188
NITRITE	MG/L-N	R	013	017	004	029	007	029	019	003	006	007	006
		T	002			003			008	004		003	
TOTAL NITRATES	MG/L-N	R	615	485	445	450	340	425	415	415	415	210	275
		T	590	490	475	435	355	395	395	310	415	240	290
NITROGEN TOTAL KJELDAHL	MG/L-N	R	400	260	250	530	330	480	370	290	270	230	
		T	240	220	460	370	260	330	280	230	190	180	

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/11/87

PARAMETERS	UNITS		SAMPLE DATE											
			86/01/06	86/02/03	86/03/03	86/04/07	86/05/05	86/06/02	86/07/07	86/08/11	86/09/02	86/10/06	86/10/29	
LEAD	MG/L-PB	R		.004		.033	.010							
		T												
PH		R	8.130	8.090	8.[illegible]						8.260	8.210	8.290	
		T	7.410	7.410	7.600	8.050	8.120	7.920	7.870	7.980	8.010	7.720	8.120	
PHOSPHORUS FIL REACT	MG/L-P	R	.018	.011	.003	.018		.006	.007	.008	.005	.005	.004	
		T	.003	.003										
PHOSPHORUS TOTAL	MG/L-P	R	.040	.027	.027	.240	.018	.042	.027	.045	.016	.015	.020	
		T			.011	.008			.017					
TOTAL SOLIDS	MG/L	R	242.00 CRO	238.00	229.00 CRO	450.00 CRO	240.00	220.00 CRO	241.00	228.00	235.00	219.00	222.00	
		T	248.00 CRO	236.00 CRO	234.00 CRO	232.00 CRO	222.00 CRO	223.00 CRO	218.00 CRO	213.00 CRO	229.00	220.00 CRO	226.00 CRO	
STRONTIUM	MG/L-SR	R	.180	.160	.180	.180	.130	.160	.180	.190	.170	.160	.180	
		T	.190	.160	.170	.170	.180	.160	.180	.180	.170	.170	.190	
COLIFORM	0=ABSENT	R												
		T											1.000	
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	R	900.00	194.00 A3C	200.00	1000.0			12.000	59.000 A3C	600.00 A3C	76.000 A3C	1300.0	
		T						1.000						
TOTAL COLIFORM BACKGROUND MF	CT/100ML	R	3000.0	408.00	100.00	1200.0			100.00	250.00	220000	920.00	8900.0	
		T	1.000					4.000						
TURBIDITY	FTU	R	11.200	8.200	6.900	50.090	3.300	4.200	3.800	10.600	4.200	5.600	5.700	
		T			1.580									
URANIUM	MG/L-U	R							.001					
		T							.001					

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/17/87

PARAMETERS	UNITS		SAMPLE DATE											DET LI
			86/01/06	86/02/03	86/03/03	86/04/07	86/05/05	86/06/02	86/07/07	86/08/11	86/09/02	86/10/06	86/10/29	
VANADIUM	MG/L-V	R			.001	.010	.010			.001		.001		
		T												
CHLOROFORM	UG/L	R												
		T	10.000	11.000	10.000	11.000	23.000	18.000	10.000	27.000	10.000	26.000	16.000	
DICHLOROBROMOMETHANE	UG/L	R												
		T	8.000	9.000	8.000	8.000	15.000	10.000	9.000	17.000	8.000	14.000	9.000	
CHLORODIBROMOMETHANE	UG/L	R												
		T	8.000	10.000	9.000	7.000	7.000	4.000	7.000	7.000	3.000	1.000	3.000	
TOTAL TRIHALOMETHANES	UG/L	R												
		T	26.000	30.000	27.000	26.000	45.000	32.000	26.000	50.000	21.000	41.000	28.000	
ZINC	MG/L-ZN	R	.008	.007	.012	.035	.019	.011	.010	.008	.021	.009	.002	
		T	.005	.004		.003	.002	.006	.001	.004	.010	.003		

PARAMETERS	UNITS		SAMPLE DATE 86/11/03	86/12/01									
ALKALINITY	MG/L-CAC	R	101.60	106 90									
		T	90 800	95 900									
ALUMINUM	MG/L-AL	R	.370	1 200									
		T	.110	061									
ARSENIC	MG/L-AS	R		001									
		T											
BARIUM	MG/L-BA	R	.030	031									
		T	026	023									
BORON	MG/L-BO	R	.030	040									
		T	.020	040									
CALCIUM	MG/L-CA	R	40 200	[illegible]									
		T	39 400	42 300									
CHLORIDE	MG/L-CL	R	28 500	29 500									
		T	28 000	32 400									
COLOUR	HZU	R	3.000										
		T											
CONDUCTIVITY	UMHO/CM	R	341 00	353 00									
		T	330 00	373 00									
CHROMIUM	MG/L-CR	R		003									
		T		004									
COPPER	MG/L-CU	R	.072	064									
		T	003	004									
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	R	70 000	166 00									
		T											

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/11/87

PARAMETERS	UNITS		SAMPLE DATE 86/11/03	86/12/01										
IRON	MG/L-FE	R	.440	1.500										
		T	.013	.006										
FLUORIDE	MG/L-F	R	.120	.140										
		T	1.110	1.200										
FIELD COMBINED CHLORINE RESIDUAL	MG/L-CL	R												
		T	1.150	.850										
FIELD FREE CHLORINE RESIDUAL	MG/L-CL	R												
		T	.050											
FIELD TOTAL CHLORINE RESIDUAL	MG/L-CL	R												
		T	1.200	.850										
FIELD PH		R	7.750	7.600										
		T	7.600	7.400										
FIELD TEMPERATURE	DEG C	R	11.000	7.000										
		T	10.000	6.000										
FIELD TURBIDITY	FTU	R	6.800	35.000										
		T	.340	.200										
HARDNESS	MG/L-CAC	R	136.00	141.50										
		T	133.00	144.50										
STANDARD PLATE COUNT MEMBRANE FILT.	CT/ML	R	2000.0	400.00										
		T	4.000											
MERCURY	UG/L-HG	R	.020	.020										
		T	.030	.020										

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/11/87

PARAMETERS	UNITS		SAMPLE DATE 86/11/03	86/12/01									
MAGNESIUM	MG/L-MG	R	8.600	9.450									
		T	8.350	9.400									
MANGANESE	MG/L-MN	R	.021	.052									
		T	.001	.001									
MOLYBDENUM	MG/L-MB	R											
		T		.001									
SODIUM	MG/L-NA	R	15.800	15.000									
		T	13.600	14.800									
NICKEL	MG/L-NI	R		.005									
		T		.004									
AMMONIUM TOTAL	MG/L-N	R	.112										
		T	.156	.150									
NITRITE	MG/L-N	R	.062	.023									
		T											
TOTAL NITRATES	MG/L-N	R	.405	.590									
		T	.340	.560									
NITROGEN TOTAL KJELDAHL	MG/L-N	R	.330	.440									
		T	.230	.240									
LEAD	MG/L-PB	R		.004									
		T											
PH		R	8.270	8.230									
		T	8.090	7.840									
PHOSPHORUS FIL REACT	MG/L-P	R	.008	.017									
		T											

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP OMSP RESULTS

02/11/87

PARAMETERS	UNITS		SAMPLE DATE 86/11/03	SAMPLE DATE 86/12/01									
PHOSPHORUS TOTAL	MG/L P	R		109									
		T											
TOTAL SOLIDS	MG/L	R	230 00	263 00									
		T	215 00 CRO	242 00 CRO									
STRONTIUM	MG/L-SR	R	210	200									
		T	180	190									
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	R	1400 0 A3C	1900 0									
		T											
TOTAL COLIFORM BACKGROUND MF	CT/100ML	R	0000 0	4000 0									
		T											
TURBIDITY	FTU	R	10 200	35 000									
		T		200									
URANIUM	UG/L-U	R	350	450									
		T	370	320									
VANADIUM	MG/L-V	R		002									
		T		001									
CHLOROFORM	UG/L	R											
		T	10 000	11 000									
DICHLOROBROMOMETHANE	UG/L	R											
		T	8 000	7 000									
CHLORODIBROMOMETHANE	UG/L	R											
		T		3 000									

Table 3 (cont'd)

SOUTH PEEL (LAKEVIEW) WTP DWSP RESULTS

02/17/9

PARAMETERS	UNITS		SAMPLE DATE									
			86/11/03	86/12/01								
TOTAL TRIHALOMETHANES	UG/L	R										
		T	18 000	21 000								
ZINC	MG/L-ZN	R	010	026								
		T	003	010								